
THE McGNASH NUCLEAR REACTION CODE: PROGRESS STATUS

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The McGNASH nuclear reaction code is being written at Los Alamos as a modern version of the well-known GNASH code which has been used successfully over the years in numerous reactions cross sections calculations and nuclear data evaluations. As its predecessor, McGNASH implements the Hauser-Feshbach statistical decay theory of the compound nucleus. It uses (uncollapsed) transmission coefficients $T(l,j)$ obtained from optical model calculations, and accounts for non-statistical corrections such as width fluctuation corrections at low incident energies (HRTW, Moldauer, GOE), and preequilibrium particles emission within the HMS hybrid model. The fission channel representation follows the GNASH implementation of the double humped fission barrier. Level densities are calculated with the Ignatyuk form of the Fermi-gas model, and the Kopecky-Uhl generalized Lorentzian formalism is used to calculate γ -ray strength functions.

McGNASH is written in modern Fortran 95, and is designed to be highly modular, allowing for a rapid and constant development. The user input interface has been simplified considerably as compared to older GNASH input files. Note that McGNASH, during this development phase, is constantly being tested against GNASH results and experimental data.

We will report on the current status of the code development, and on some recent calculations aimed at testing and demonstrating the new capabilities of McGNASH.